Remarks

The Applicant respectfully requests reconsideration of the present U.S. Patent Application as amended herein. Claims 10-12, 30, and 35 have been allowed. Claims 1 and 13 have been amended and in this response. Also, claims 18-28 and 33 have been cancelled without prejudice. No claims have been added or withdrawn in this response. Thus, claims 1-17, 29-32, 34 and 35 remain pending in the application.

Claim Rejections § 103

Claims 1, 2, 4-8, 10, 11, 13-17, 29-32, and 34 were rejected under 35 U.S.C. § 103(a) as being obvious in view of U.S. Patent Applicaiton 2003/0084253 in the name of Johnson et al. (*Johnson*) in combination with U.S. Patent Application 2003/0033480 in the name of Jeremiassen (*Jeremiassen*). Claims 10 and 11 have been allowed. The Applicant believes that the inclusion of claims 10 and 11 in this 103 rejection is a typographical error. For at least the reasons set forth below, that Applicant submits that claims 1, 2, 4-8, 13-17, 29-32, and 34 are patentable over *Johnson* in view of *Jeremiassen.*

The Manual of Patent Examining Procedure ("MPEP"), in § 706.02(j), states:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, **the prior art reference** (or references when combined) **must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be both found in the prior art and not based on

> applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

(Emphasis added). Thus, the MPEP and applicable case law require that the Office action establish that a combination of references teach or suggest **all of the claim limitations** of rejected claims to sustain an obviousness rejection under 35 U.S.C. § 103. As shown below, Applicants respectfully submit that the Office action does not establish a *prima facie* case of obviousness.

Independent claim 1 recites:

> Apparatus comprising:
>
> a cache memory comprising cache lines to store data, each of at least a subset of the cache lines having multiple portions**, each portion corresponding to a validity bit that is set to a predefined value when the corresponding portion of the cache line is fully written with new data in one write transaction**, at least some of the data to be written to a main memory; and
>
> **an eviction mechanism to evict data stored in one of the cache lines upon detecting validity bits indicating that respective portions of the cache line have been written with new write data that were not read from the main memory**, the eviction mechanism to send the evicted data to the main memory.

(Emphasis added). Independent claims 13 is a method claim that similarly recites, "storing the write data into portions of a single cache line of a cache memory, the cache line having multiple portions, each portion corresponding to a validity bit that is set to a predefined value when the corresponding portion of the cache line is fully written with new data in one write transaction" and "detecting validity bits indicating that respective portions of the cache line have been written with new write data that were not read from the main memory."

Johnson discloses "age-bits [that] are used to indicate whether lines in the cache may be stale." See, e.g., paragraph 17. *Johnson* does not, however, teach or suggest "a cache line having multiple portions, each portion corresponding to a validity bit" or "an eviction mechanism to evict data stored in one of the cache lines upon detecting validity bits indicating that respective portions of the cache line have been written with new write data that were not read from the main memory," as recited in claims 1 and 13.

Jeremiassen discloses "a copy-back cache [scheme in which] ... data [that] is written into the cache block, but not written to memory, ... is marked "dirty." See, e.g., paragraph 33. *Jeremiassen* does not, however teach or suggest "a cache line having multiple portions, each portion corresponding to a validity bit" or "an eviction mechanism to evict data stored in one of the cache lines upon detecting validity bits indicating that respective portions of the cache line have been written with new write data that were not read from the main memory, " as recited in claims 1 and 13. Since neither *Johnson* nor *Jeremiassen* teaches or suggests the above-cited claim limitations, no combination of *Johnson* with *Jeremisassen* can teach or suggest the above-cited claim limitations. Thus, the Applicant respectfully submits that claims 1 and 13 are patentable over a combination of *Johnson* with *Jeremiassen.*

Claims 2-9, 29 and 34 depend from claim 1. Claims 14-17, 31, and 32 depend from claim 13. For at least the reason that dependent claims include the limitations of the claims from which they depend, the Applicant respectfully submits that claims 2-9, 29, 34, 14-17, 31, and 32 are patentable over *Johnson* in view of *Jeremiassen.*

Claims 18-19, 21-23, 28, and 33 were rejected under 35 U.S.C. § 103(a) as being obvious in view of *Johnson* in combination with U.S. Patent Application 2004/0186958

in the name of Percival (*Percival*). Claims 18-19, 21-23, 28, and 33 have been cancelled without prejudice and, therefore, the rejection of claims 18-19, 21-23, 28, and 33 is moot.

Claims 24-26 were rejected under 35 U.S.C. § 103(a) as being obvious in view of *Johnson* in combination with *Percival* and U.S. Patent Application 2003/0105929 in the name of Ebner et al. (*Ebner*). Claims 24-26 have been cancelled without prejudice and, therefore, the rejection of claims 24-26 is moot.

Claim 9 was rejected under 35 U.S.C. § 103(a) as being obvious in view of *Johnson* in combination with *Jeremiassen* and *Percival*. Claim 9 depends from claim 1 and includes the limitations of claim. For at least the reasons set forth below, the Applicant submits that claim 9 is patentable over *Johnson*, *Jeremiassen*, and *Percival*.

Percival is cited as disclosing a cache that caches data from at least one I/O device. Whether or not *Percival* discloses the limitations cited by the Office action, it does not teach or suggest "a cache line having multiple portions, each portion corresponding to a validity bit" or "an eviction mechanism to evict data stored in one of the cache lines upon detecting validity bits indicating that respective portions of the cache line have been written with new write data that were not read from the main memory, " as recited in claim 1. Because each of *Johnson*, *Jeremiassen*, and *Percival* fails to teach or suggest the above-cited claim limitations, no combination of *Johnson*, *Jeremiassen*, and *Percival* teaches or suggests the above-cited claim limitations. Thus, the Applicant respectfully submits that dependent claim 9 is not rendered obvious by *Johnson* in view of *Jeremiassen* and *Percival*.

Claim 27 was rejected under 35 U.S.C. § 103(a) as being obvious in view of *Johnson* in combination with *Jeremiassen* and "Cache Consistency Protocol" by Peter G.

Sassone. Claim 27 has been cancelled without prejudice and, therefore, the rejection of claim 27 is moot.

Claim 20 was rejected under 35 U.S.C. § 103(a) as being obvious in view of *Johnson* in combination with *Percival* and "Cache Consistency Protocol" by Peter G. Sassone. Claim 20 has been cancelled without prejudice and, therefore, the rejection of claim 20 is moot.

Conclusion

The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the present application.

Respectfully submitted,

Date: December 21, 2005 /Philip A. Pedigo/

Philip A. Pedigo
Reg. No. 52,107
Attorney for Intel Corporation

c/o Blakely, Sokoloff, Taylor, & Zafman LLP
12400 Wilshire Boulevard
Seventh Floor
Los Angeles, CA 90025-1026
(503) 712-5560 or (502) 439-8778

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:
Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450

On: December 21, 2005

Signature: 
Katherine Jennings